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10/687,136	10/17/2003	Robert Peter Ison	213411.00029	8259

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PATENT ADMINISTRATOR
KATTEN MUCHIN ROSENMAN LLP
1025 THOMAS JEFFERSON STREET, N.W.
EAST LOBBY: SUITE 700
WASHINGTON, DC 20007-5201

EXAMINER	
CRABTREE, JOSHUA DAVID	
ART UNIT	**PAPER NUMBER**
3714	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,136	ISON ET AL.	
	Examiner	Art Unit	
	Joshua D. Crabtree	3714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/17/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *1-3, 15-18, 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-14 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/28/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 1-3, 15-18, and 20 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group I, there being no allowable generic or linking claim. Election was made in the reply filed on 11/17/2006. Applicant's election of Group II comprising claims 4-14 and 19 in the reply filed on 11/17/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claim 19 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Specifically, claim 19 is directed toward an electrical signal containing an embedded data structure. Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per

se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. See MPEP 2106.01 [R-5].

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 4-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.** Specifically, claim 4 recites a "system/machine simulation". It is unclear what structural element(s) are denoted by this phrase. For example, the phrase could be interpreted as "system and machine simulation", or "system simulation or machine simulation", etc. Therefore, claim 4 is rendered vague and indefinite. Claims 5-14 depend from claim 4, and therefore inherit this deficiency.

4. Claim 5 recites the limitation of "a probe point to which the microelectronic circuit is connected". There is insufficient antecedent basis for this limitation in the claim.

5. Claim 10 recites the limitation of "simulation parameters maintained by the simulation". There is insufficient antecedent basis for this limitation in the claim.

6. Additionally, Claim 10 recites the limitation wherein the host computer "is adapted to use the mode selection input... etc.". It is unclear what steps or structural limitations are required to adapt the computer to use the mode selection input. Therefore, it is unclear exactly how claim 9 limits the scope of the invention, since the claim language as recited does not require steps to be performed, and does not limit a claim to a particular structure. (See MPEP 2111.04 [R-3]).

7. Additionally, claims 10-11 each recite the limitation of "the simulation." The parent claim (claim 1) recites three structural elements (a mechanical mock-up, a host computer which communicates with a system/machine simulation, and simulated diagnostic equipment), each of which may be construed independently as simulations. Furthermore, one could also construe that all three recited elements of claim 1, put together, constitute a single simulation. It is unclear which structural element constitutes the "simulation", as recited in claims 10 and 11. Therefore, the claims are rendered vague and indefinite.

8. Claim 12 recites the limitation of "the simulated probed equipment". It is unclear whether this limitation refers to the mechanical mock-up of claim 1, which includes probe points, or whether the limitation refers to the simulated diagnostic equipment of claim 1, which includes a probe. Therefore, the claim is rendered vague and indefinite.

9. Claim 14 recites the limitation of "the simulation server". There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination, the examiner has interpreted this feature to be equivalent to the host computer.

10. Claim 19 includes the phrase "upon electrical contact with a probe". It is unclear what structural element is contacting a probe. The claim recites a signal, a memory, a mechanical mockup and a machine. It is unclear which, if any, of the aforementioned elements contacts a probe, as recited in the aforementioned phrase. Therefore, the claim is rendered vague and indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 4-6 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Schrenk et al. (US 4,091,550).

With regard to claim 4, and the limitation of a mechanical mock-up of at least part of a system on which the training is required, Schrenk et al. disclose that a simulated piece of electronic equipment may be used (Col. 3: 35-53; Item 10 in Fig. 1).

With regard to the limitation wherein the mock-up has a plurality of probe points which are respectively connect to electronically readable memories that respectively store a unique identifier code, Schrenk et al. disclose that the simulated piece of equipment contains a plurality of test points (Col. 54-65). A test point storage

device, such as a digital memory, stores digital test point condition signals which represent a condition at preselected test points of the simulated equipment, which contain probe detection storage means (such as array tables) to store digital test point identification signals which represents the test point of the simulated equipment (i.e., a unique identifier) (Col. 1: 48-59; Col. 5: 9-16). In this case, the plurality of memory locations, as disclosed by Schrenk et al., is analogous to a plurality of memories, as recited in the claim.

With regard to the limitation of a host computer comprising means for communicating with a system/machine simulation, the specification of the instant application recites that a communications processor is communicatively coupled to the simulation (Paragraph [0014]; See also item 180 in Fig. 6). The specification also recites that a diagnostic tool may be used to read information from (i.e., communicate with) a mechanical mockup (Paragraph [0015]). Schrenk et al. disclose that a data processor, using software, may be used to drive and monitor a simulated Volt-Ohm meter (VOM), which is used to probe various test points on a simulation (i.e., communicate with the simulation). Schrenk et al. disclose that the simulated electronics device may be used to simulate various conditions, such as normal operating conditions, and conditions in which certain components have failed (Col. 2: 18-26). Additionally, Schrenk et al. disclose that the electronics device may simulate different types of radios (Col. 4: 27-34). Therefore, the implementation of the electronics device in a simulation is analogous to a system/machine simulation.

With regard to the limitation of a host computer comprising means for associating each unique identifier code with a corresponding probe event, passing a probe event to the system/machine simulation, and determining a response of the system/machine simulation to the probe event, the specification of the instant application recites that software performs these functions (Paragraph [0037]). Schrenk et al. disclose that software may be implemented the functions of the invention (Col. 1: 60-68; Col. 5: 3 -Col. 6: 66; See Abstract).

Additionally, the specification of the instant application recites that a look-up table may be used to associate each unique identifier code with a corresponding probe event (Box. 132 in Fig. 5; Paragraph [0027]). Schrenk et al. disclose that an array table (i.e., look-up table) may be used to associate a test points condition signals with test points touched by a probe (Col. 5: 3-21).

With regard to the limitation of simulated diagnostic equipment having at least one probe that can be maneuvered to contact any one of the probe points, Schrenk et al. disclose that a simulated testing device, such as a simulated Volt-Ohm meter (VOM) may be used (Col. 1: 43-47; Col. 4: 35-45; See also Items 142 and 171 in Fig. 1).

With regard to the limitation of simulated diagnostic equipment comprising a means for reading the unique identifier code when one of the probe points is contacted by the probe, the specification of the instant application recites that the unique identifier may be read using the diagnostic tool (Paragraph [0014-0015]). Schrenk et al. disclose

that the signal at a test point may be received using the simulated diagnostic device (Col. 1: 64-68; Col. 6: 31-41).

With regard to the limitation of simulated diagnostic equipment comprising means for communicating with the host computer in order to pass each unique identifier code to the host computer and to receive feedback from the host computer, and means for processing the feedback to determine a display value to be displayed, the specification of the instant application recites that the diagnostic tool is communicatively coupled with the computer, and that information is communicated via the probe lead (Paragraph [0035 - 0036]). Schrenk et al. disclose that the probe point touches the test point, and the computer calculates how to adjust the appearance of the diagnostic device, such as the deflection of a display needle (i.e., determine feedback to display) (Col. 6: 33-66). Therefore, the diagnostic tool of Schrenk et al. is communicatively coupled with the computer, and communicates information using the probe point.

With regard to claim 5, and the limitation wherein each of the electronically readable memories respectively comprise a microelectronic circuit that is activated to output the unique identifier code when the probe contacts a probe point to which the microelectronic circuit is connected, Schrenk et al. disclose that array locations (i.e., memory addresses) are used to store the unique identifier signals associated with the test points, as previously described. A microelectronic circuit is an inherent part of a digital memory.

With regard to claim 6, and the limitation wherein the probe activates the microelectronic circuit when it contacts the probe point by supplying an electrical current through the connection to the microelectronic circuit, Schrenk et al. disclose that a probe tip has a voltage, and when a probe tip touches a test point, it completes a circuit, which includes conductors connected to the digital memory (Col. 4: 67 - Col. 6: 49; *See also Fig. 7, which shows circuit which is between test points and array locations*).

With regard to claim 19, and the limitation of a computer readable modulated electrical signal emitted from an electronically readable memory connected to a mechanical mockup of a system or a machine upon electrical contact with a probe of a simulated diagnostic tool, Schrenk et al. disclose a memory, containing array tables, as previously described (Col. 5: 3-20). The retrieval of information from the memory would inherently include the feature wherein a computer readable modulated electrical signal is emitted from the memory. Schrenk et al. disclose that such information is retrieved upon electrical contact with a probe of a simulated diagnostic tool, as previously described. With regard to the limitation of a unique identifier code embedded in the signal, Schrenk et al. disclose that the array locations contain data corresponding to the test points, as previously described. Therefore, any retrieval of the data stored in an array location would necessarily include the feature wherein the data is embedded in the signal emitted from the memory. With regard to the intended use of the code "for permitting a training system to determine... etc.", the recitation in the claim only shows the intended use of the claimed invention. While features of an

apparatus may be recited either structurally or functionally, claims directed to an apparatus or system must be distinguished from the prior art in terms of structure rather than function (See MPEP 2114).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schrenk et al. in view of Krauss et al. (US 2002/0191363).

With regard to claim 7, Schrenk et al. do not explicitly disclose the feature wherein the electronically readable memory comprises a touch memory button. Krauss teaches a system which implements a memory button (Paragraph [0012]). Krauss teaches that a memory button may be used for the reading and writing of data (Paragraph [0012]), and may provide the advantage of allowing storage of parameters in a very simple manner (Paragraph 0013]), and may also provide for time stamping various logic functions (Paragraph [0014]). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the teaching of Krauss et al. into the invention of Schrenk et al. in order to provide the aforementioned advantages.

13. Claims 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schrenk et al. in view of Fordham et al. (US 5,067,901).

With regard to claim 8, and the limitation wherein the simulated diagnostic tool is a multimeter having two probes, Schrenk et al. disclose a simulated Volt-Ohm meter with a probe, as previously described. However, Schrenk et al. do not explicitly disclose a multimeter having two probes. Fordham et al. teach a simulated multimeter which utilizes two test leads (i.e., probes) (See Abstract; Items 16a-b in Fig. 4). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the teaching of Fordham et al. into the invention of Schrenk et al. in order to provide a simulation system utilizing a simulated multimeter with two probe leads. With two probes, instead of just one, a user could measure the difference in voltage or resistance between two different parts of the simulated system. This could be useful in determining if a short or open circuit exists in the simulation, which could aid the user in troubleshooting.

With regard to claim 9, and the limitation wherein the simulated diagnostic tool comprises a simulated digital multimeter, with a mode selector input, and a communications processor for communicating with the host computer, Schrenk et al. disclose a simulated Volt-Ohm meter (i.e., multimeter) as previously described. The Volt-Ohm meter contains a scale-selector control (i.e., mode selector input) (Col. 4: 46-61; Knob 150 in Fig. 1). Additionally, Schrenk et al. disclose that a mode selector dial is included in the simulated electronic equipment (Col. 3: 42-53). Schrenk et al. disclose

that data from the Volt-Ohm meter is input and output via a hybrid computer link, under computer control (Col. 5: 28-45; Col. 6: 55-66). Therefore, the invention inherently includes a communications processor for communicating with the computer. However, Schrenk et al. do not explicitly disclose the feature wherein the simulated multimeter is a *digital* multimeter. Fordham et al. teach a simulated digital multimeter (Col. 1: 44 - Col. 2: 11). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the teaching of Fordham et al. into the invention of Schrenk et al. in order to provide an instructional system utilizing a simulated digital multimeter. The multimeter of Schrenk et al. utilizes analog-to-digital (A/D), and digital-to-analog (D/A) converters (Col. 6: 55-66). By implementing a multimeter capable of receiving and transmitting digital signals, without needing A/D and D/A converters, less hardware would be needed, and construction of the invention might be more cost-effective. Additionally, with fewer parts in the system, there would be less of a chance of a component failing (such as an A/D converter).

With regard to claim 10, Schrenk et al. disclose that the computer may communicate with the test point storage device (such as a digital memory), which may store test point condition data corresponding to various conditions (or simulation scenarios) associated with the simulated equipment (Col. 1: 47 - Col. 2: 26). Therefore the computer may be used to determine simulation parameters maintained by the simulation. Since a computer may be used to control the simulation. the feature wherein the computer is adapted to use the mode selection input is inherently part of

the invention of Schrenk et al. Although a user may manually *provide* the mode selection input, via turning the mode selection knob (Item 17 in Fig. 1; Col. 3: 35-53), or by manipulating the scale selection switch (Col. 4: 46-61), the computer *uses* the input (Col. 6: 55-66). Schrenk et al. further disclose that the computer receives input of trainer parameters (Col. 7, Table 1, Lines 54-56).

With regard to claim 11, and the limitation of an instructor station that may be used to control the simulation to simulation to simulate system faults, Schrenk et al. disclose that the system is used to interact with and teach a student to operate a tester device to detect conditions associated with various simulations, as previously described (Col. 6: 15-66; See also claim 1). Various failure conditions may be simulated (Col. 2: 18-26). Additionally, Schrenk et al. disclose that an instructor display may be provided (Item 210 in Fig. 6; Col. 6: 50-54). Therefore, the system of Schrenk et al., in its entirety, may be construed as an instructor station which may be used to control the simulation and to simulate system faults.

With regard to claim 12, Schrenk et al. disclose that an instructor display may be used to allow an instructor to monitor a student in a training exercise, and display help requests from a student. Schrenk et al. disclose that the software used in the system may include routines (i.e., simulation program), which help guide the student through an exercise (Table 1, Cols. 7-8). The system may be programmed to simulate different types of component failures (i.e., select preprogrammed system faults) (Col. 44-49).

With regard to claim 13, and the limitation of an electronic memory in communications with the host computer for storing student responses to training exercises, Schrenk et al. disclose that student responses from the keyboard, as well as the Volt-Ohm meter are input and stored in the computer (Col. 6: 55 - Col. 8: 33).

With regard to claim 14, and the limitation wherein the host computer further comprises a look-up table for associating the unique identifier code with a probe point of the simulated probed equipment to identify a probe point event, Schrenk et al. disclose an array table (i.e., look-up table) may be used to associate test points data corresponding to each test point, as previously described (Col. 5: 3-20). With regard to the limitation wherein the host computer comprises a procedure for communicating the probe point event to the simulation server, Schrenk et al. disclose that software may be used to drive and monitor the Volt-Ohm meter, which includes receiving input from the Volt-Ohm meter (Col. 6: 15-66). As stated above, due to the lack of antecedent basis for the limitation of a simulation server, the examiner has interpreted the limitation to be equivalent to the host computer.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

15. Keweza (US 4,259,077) discloses a wireless logic trainer.

16. Anlauf et al. (US 4,340,935) disclose a method of testing the operativeness of a control system.

17. Jensen (US 4,464,120) discloses a simulator for interactive simulation of complex dynamic systems.

18. Brown (US 4,995,038) discloses a system for finding faults in circuit boards.

19. Pink et al. (US 5,532,927) disclose an automotive diagnostic tool.

20. Kanzaki et al. (US 5,562,454) discloses an educational circuit training system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua D. Crabtree whose telephone number is 571-272-8962. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert P. Olszewski can be reached on (571) 272-6788. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JC
Joshua D. Crabtree
February 2, 2007

JOE CHENG
PRIMARY EXAMINER